

## Lightsource Test Report

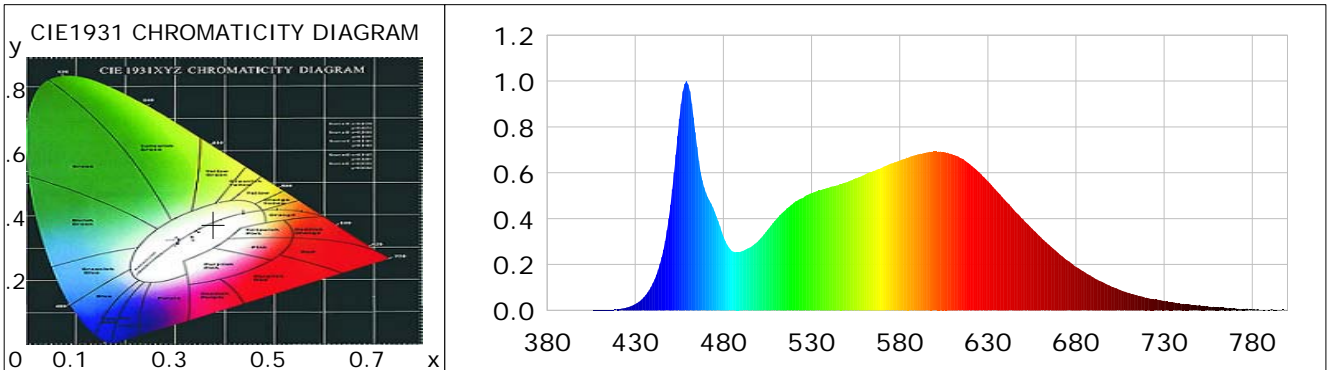
### Product Information

Product Category: LED-Röhre  
 Product Spec: Ledtube-145-6NWM-30W  
 Manufacturer: METOLIGHT  
 Buyer: 2105-20928

Product Type: LED-Röhre-SCE  
 Product Number: 1  
 Submitted Unit: 104585

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3771$   $y=0.3740$   $u(u')=0.2240$   $v=0.3332$   $v'=0.4998$   
 CCT:  $T_c=4073K$  ( $duv=-0.00032$ ) Color Ratio:  $R=0.189$   $G=0.767$   $B=0.044$   
 Peak Wavelength: 459.0nm Half Bandwidth: 20.2nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.254  
 CRI:  $R_a = 86.4$ ,  $avgR(1\sim14) = 81.3$ ,  $avgR(1\sim15) = 81.4$  TM30:  $R_f = 83$ ,  $R_g = 92$   
 GAI:  $GAI\_BB\_8=91.6$ ,  $GAI\_BB\_15=100.1$ ,  $GAI\_EES=73.3$   
 R1 =87 R2 =96 R3 =96 R4 =82 R5 =85 R6 =91 R7 =85 R8 =70  
 R9 =30 R10=87 R11=81 R12=60 R13=90 R14=99 R15=82  
 Color Quality Scale:  $Q_a = 84.4$ ,  $Q_f = 84.7$ ,  $Q_p = 83.2$ ,  $Q_g = 91.8$   
 Q1 =81 Q2 =95 Q3 =84 Q4 =76 Q5 =78 Q6 =80 Q7 =86 Q8 =90  
 Q9 =98 Q10=94 Q11=90 Q12=88 Q13=88 Q14=79 Q15=81



### Photometric Parameters

Luminous Flux: 3401.3 lm Efficiency: 125.65 lm/W Radiant Power: 10.623 W  
 Total mains efficacy: 147.76 lm/W Energy Efficiency Class: D (EU 2019/2015)  
 Pupil Flux: 5368.99 Plm Pupil Lumens Per Watt: 198.34 Plm/W Pupil Factor (Kp): 1.579  
 Circopic Flux: 11393.39 lm

### Electric Parameters

Voltage: 230.70V Current: 0.1210A Power: 27.07W  
 Power Factor: 0.9640 Frequency: 49.99Hz

### Test Information

Scan Range: 380~800:1nm Photometric Method: sphere-spectroradiometer  
 Stabilization Time: 0 ms ALC.: 1.0000 Photometric Condition: Sphere diameter: 2.00m, 4PI  
 Max of Signal: 45577 (2370) CCD Integration Time: 80.00 ms

Condition: Tx:19.8'C, Ti:0.0'C, R.H.:60%  
 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
 Test Time: 2021-01-22 11:50:17  
 Inspector:

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WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)	WL(nm)	PL	PE(mW/nm)
380	0.0002	0.0156	525	0.4898	40.9430	670	0.2503	20.9226
385	0.0006	0.0532	530	0.5112	42.7334	675	0.2185	18.2632
390	0.0003	0.0213	535	0.5236	43.7635	680	0.1897	15.8593
395	0.0003	0.0257	540	0.5361	44.8072	685	0.1660	13.8763
400	0.0006	0.0464	545	0.5458	45.6221	690	0.1426	11.9176
405	0.0006	0.0483	550	0.5586	46.6900	695	0.1231	10.2866
410	0.0012	0.1043	555	0.5754	48.0982	700	0.1044	8.7297
415	0.0025	0.2048	560	0.5908	49.3801	705	0.0888	7.4227
420	0.0050	0.4191	565	0.6082	50.8419	710	0.0762	6.3688
425	0.0123	1.0283	570	0.6226	52.0378	715	0.0647	5.4039
430	0.0273	2.2841	575	0.6407	53.5532	720	0.0552	4.6100
435	0.0581	4.8556	580	0.6535	54.6259	725	0.0476	3.9771
440	0.1184	9.8930	585	0.6666	55.7158	730	0.0413	3.4500
445	0.2318	19.3779	590	0.6793	56.7800	735	0.0350	2.9240
450	0.4606	38.5035	595	0.6881	57.5194	740	0.0286	2.3916
455	0.8350	69.7972	600	0.6932	57.9413	745	0.0248	2.0732
460	0.9850	82.3350	605	0.6907	57.7355	750	0.0239	2.0007
465	0.7134	59.6289	610	0.6794	56.7875	755	0.0173	1.4471
470	0.5141	42.9741	615	0.6630	55.4147	760	0.0146	1.2163
475	0.4301	35.9511	620	0.6362	53.1770	765	0.0113	0.9440
480	0.3224	26.9471	625	0.6022	50.3401	770	0.0085	0.7145
485	0.2581	21.5719	630	0.5632	47.0722	775	0.0063	0.5288
490	0.2568	21.4638	635	0.5204	43.4958	780	0.0046	0.3873
495	0.2740	22.9057	640	0.4780	39.9543	785	0.0026	0.2203
500	0.3045	25.4503	645	0.4362	36.4583	790	0.0021	0.1792
505	0.3505	29.2975	650	0.3967	33.1625	795	0.0032	0.2635
510	0.3979	33.2587	655	0.3573	29.8633	800	0.0040	0.3345
515	0.4360	36.4441	660	0.3195	26.7090			
520	0.4694	39.2400	665	0.2836	23.7076			

Condition: Tx: 19.8°C, Ti: 0.0°C, R.H.: 60%  
 Test Lab:  
 Operator: CRE

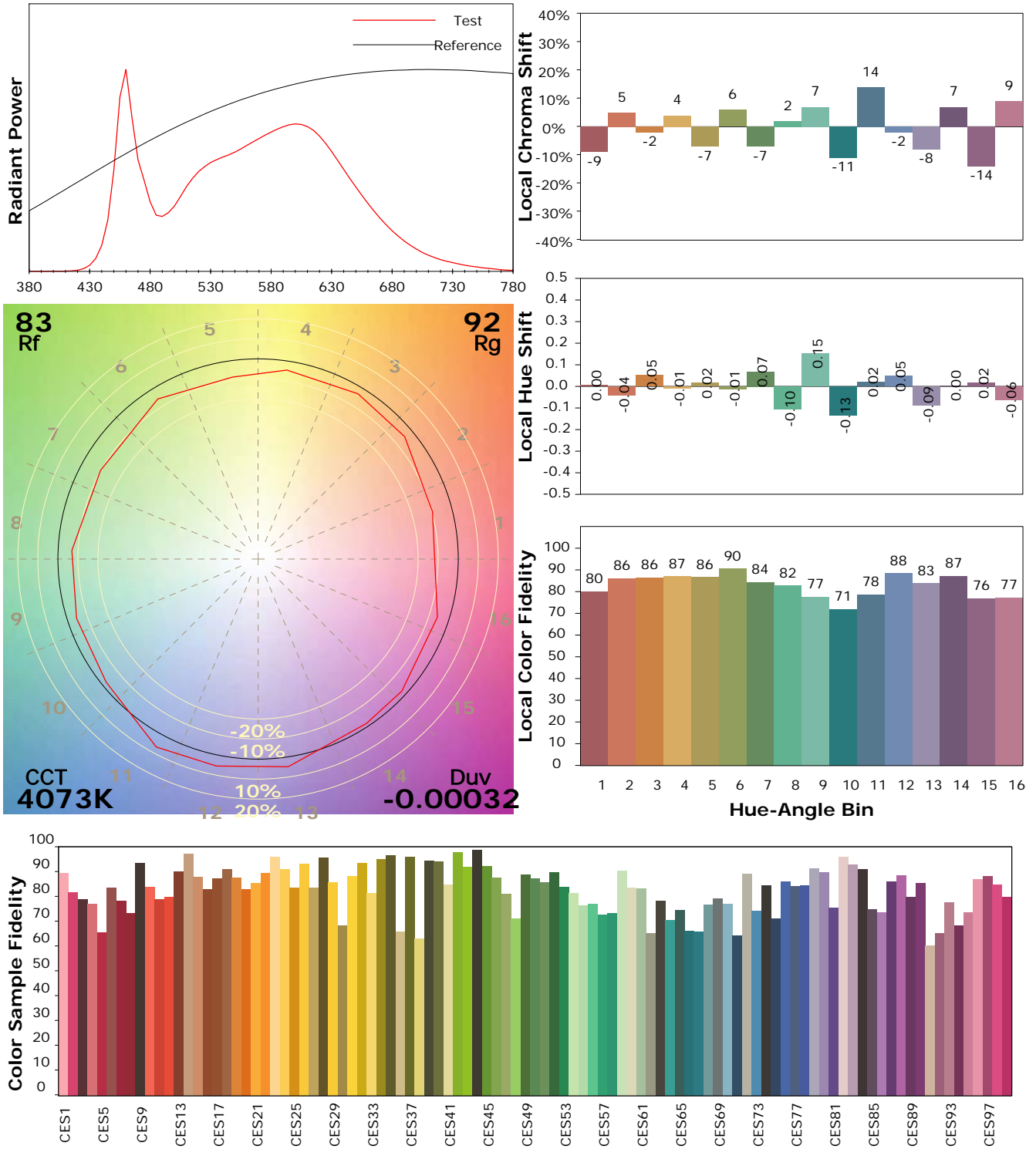
Test Device: Lisun LMS-9000B  
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 Inspector:

## IES TM-30-18 Color Rendition Report

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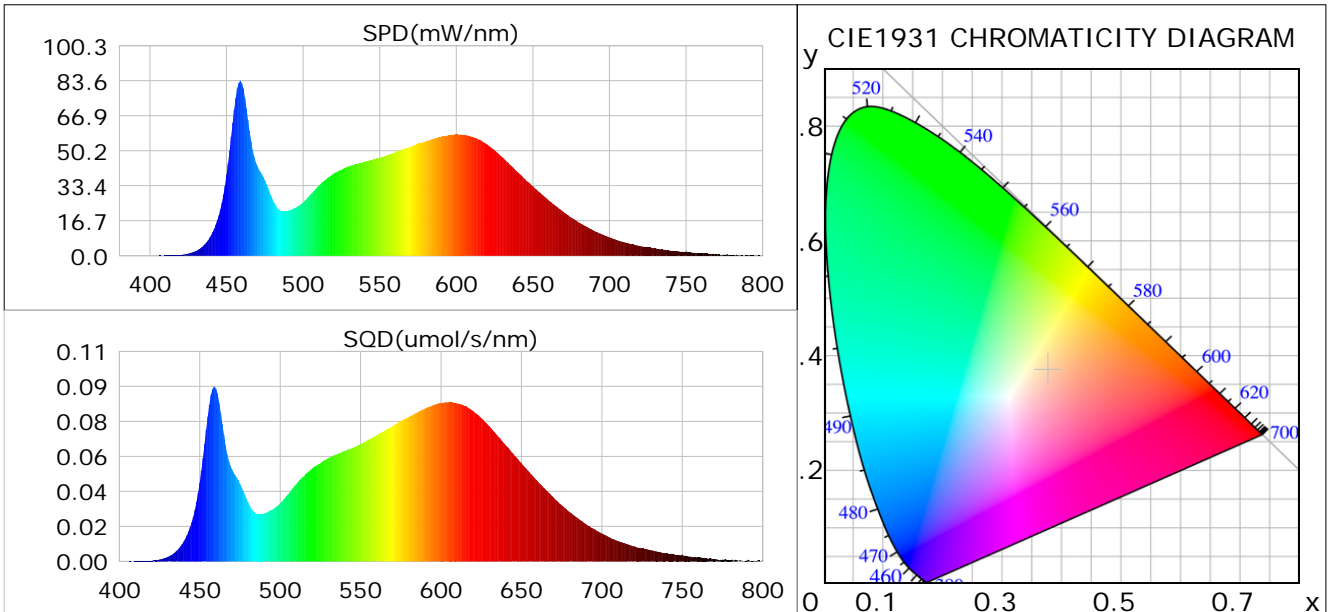
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 Test Lab:  
 Operator: CRE

Test Device: Lisun LMS-9000B  
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 Inspector:

## Plant optical param data

### CIE Colorimetric Parameters

Chromaticity coordinates:  $x=0.3771$   $y=0.3740$   $u(u')=0.2240$   $v=0.3332$   $v'=0.4998$   
 CCT:  $T_c=4073K$  ( $duv=-0.00032$ ) Color Ratio:  $R=0.189$   $G=0.767$   $B=0.044$   
 Peak Wavelength: 459.0nm Half Bandwidth: 20.2nm  
 Dominant Wavelength: 579.0nm Color Purity: 0.254  
 CRI:  $R_a=86.4$



### Plant Optical Param

$ \mu_v(lm)$ : 3401.30	$Q_v(lm.s)$ : 3401.30
$ \mu_e, \dot{E}(W/nm)$ : 10.62	$Q_e(J)$ : 10.62
$ \mu_e(W)$ : 10.38	$ \mu_{fr}(W)$ : 0.26
$ \zeta_e$ : 0.38	$ \zeta_{fr}$ : 0.01
PPE(umol/s/w): 1.80	Kfr: 0.06
Erb_Ratio: 1.42	PPF(umol/s): 48.70
PFuv(360-400)(umol/s): 0.00	PPF(400-500)(umol/s): 9.26
PPF(500-600)(umol/s): 21.53	PPF(600-700)(umol/s): 17.91
PPfr(700-800)(umol/s): 1.51	PPF.t(umol): 48.70
$ \mu_{ch-A.t}(J)$ : 0.77	$ \mu_{ch-A}(W)$ : 0.77
$ \mu_{ch-B.t}(J)$ : 0.52	$ \mu_{ch-B}(W)$ : 0.52
$ \mu_b.t(J)$ : 2.38	$ \mu_b(W)$ : 2.38
$ \mu_y.t(J)$ : 4.66	$ \mu_y(W)$ : 4.66
$ \mu_r.t(J)$ : 3.42	$ \mu_r(W)$ : 3.42

### Electric Parameters

Voltage: 230.70V	Current: 0.1210A	Power: 27.07W
Power Factor: 0.9640	Frequency: 49.99Hz	

Condition:  $T_x=19.8^\circ C$ ,  $T_i=0.0^\circ C$ , R.H.: 60%  
 Test Lab:  
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